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# The effects of information resources on children and adolescent mental health in pandemics; Covid-19 sample

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## Abstract

**Aims:** Pandemics have negative physical and mental effects on children and adolescents. However, our knowledge about the factors related to the mental problems experienced in this process is limited. This study aimed to examine the association between resources of Covid-19 related information exposure and sociodemographic characteristics and mental health problems during pandemics.

**Method:** This study was carried out with 1030 children. The sociodemographic characteristics of the participants and exposure to information flow about the Covid-19 pandemic were recorded. Psychiatric problems were assessed using the DSM-5 Level-2 Anxiety Scale, DSM-5 Level-2 Depression Scale, DSM-5 Level-2 Sleep Disorder Scale.

**Results:** The mean age was found as 10.45 years. It was determined that 33% of the participants had moderate/high level anxiety symptoms and 16.1% had moderate/high level depressive symptoms. Girl gender was related with anxiety-depression symptoms and sleep disorders, living in urban area was related with anxiety symptoms, increasing age and presence of death due to Covid-19 were associated with depression symptoms. It was determined that information exposure through TV, internet and peer conversations is associated with anxiety-depression symptoms, and information exposure via internet and family conversations was associated with sleep disorder symptoms.

**Conclusion:** Measures to be taken for both sociodemographic risk factors and the negative consequences of resources of information exposure may reduce the negative psychological effects of pandemics on children.

**mental health; depression; anxiety; children and adolescents; information resource**

## INTRODUCTION

Throughout the history of civilization, one of the conditions that people have faced and that cause serious problems on health, economy, public security have been pandemics such as smallpox, cholera, plague, dengue, influenza [1]. In pandemics, many people may experience serious physical and psychological health problems. In fact, it is stated that the effect of psychological problems is greater than the effect of physical diseases [2]. Previous studies have shown that mental disorders, such as anxiety disorders, mood disorders, post-traumatic stress disorder, can be triggered or exacerbated by pandemic-related stressors [3,4].

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Coronavirus Disease-2019 (Covid-19), which first appeared in China on 31 December 2019 is the last pandemic in the world. Similar to previous pandemics, it has been shown that many people, including children and adolescents, experience psychiatric disorders in the Covid-19 pandemic. Chen et al. found that depression rate was 11.7% and anxiety was 18.9% in Chinese children between the ages of 6-15, during the Covid-19 pandemic. It was stated that depression rates increased with age, and females had higher rates of anxiety and depression than male [5]. Zhou et al, also found that 43.7% of the Chinese adolescents had depressive symptoms and 31.3% of them had anxiety symptoms and female gender was a risk factor for anxiety and depression symptoms [6].

There may be several etiological mechanisms such as fear, uncertainty, exposure to widespread deaths, death of loved ones, the personality factors and socially restrictions, in the emergence or exacerbation of psychiatric disorders during the pandemic period [7,8]. Another reason for increased mental disorders during the pandemic may be the pandemic process related information exposures. Due to the negative outcomes of the pandemic on people, individuals want to be informed about new information and developments about Covid-19, therefore people use media tools more [9]. Information about Covid-19 is frequently found in media tools. For example, the latest informations about Covid-19 are transmitted to people in news programs every day. Children and adolescents are also exposed to information about Covid-19. In studies conducted with children and adolescents, it has been determined that anxiety and depressive symptoms are more common in children and adolescents who are exposed to information about Covid-19 [10,11].

Children and adolescents may be exposed to information flow through media tools, family conversations and peer conversations. Among the media tools, the most used ones are the internet and television. These two tools both facilitate and accelerate people's access to information, but they also have negative effects on individuals. In previous studies, it was determined that the media caused problems such as night fears, anxiety symptoms, depressive symptoms, sleep disorders in children [12,13]. In studies investigating the effect of news on children, it has been determined that anxiety symptoms and negative emotions such as nightmares, obsessive thoughts, physical symptoms occur in children exposed to the news [14]. In addition, Kleemans et al. investigated the effects of presenting negative news in constructive and nonconstructive ways on children. Results showed that both story versions decreased positive emotions in children, and the increase in negative emotions was greater in children exposed an unconstructive news [14]. The most important difference of other information sources (social media, family, peers) other than TV is the absence of a control mechanism. Lack of control mechanism may cause exposure to false information and more psychiatric problems.

Determining the negative psychiatric consequences of pandemics on children and adolescents and the risk factors causing these results will make significant contributions to the determination of intervention programs to protect individuals' mental health in pandemics. This study aimed to evaluate the prevalence of depression and anxiety symptoms and sleep problems in children and adolescents and the effects of resources of pandemic process related information exposure on the emergence of these symptoms.

## MATERIALS AND METHOD

### Participants

This study designed as cross-sectional and was carried out by the using an online survey to evaluate the sociodemoghraphic characteristics, anxiety, depression and sleep disturbance symptoms. Parents with children aged 6-17 were asked to complete the online survey via Google forms. The study conducted with 1100 participants. Participants (n=70) who were found to have psychiatric disorders before the pandemic were excluded from and 1030 participants were included. Participants filled out an informed consent form before starting the online questionnaire. No payment was made to the participants. All participants answered the demographic data form, DSM-5 Level 2 Anxiety Scale for Parent/Guardian of Child (DSM-5-AS-P), DSM-5 Level

2 Depression Scale for Parent/Guardian of Child (DSM-5-DS-P), and DSM-5 Level 2 Sleep Disturbance Scale for Parent/Guardian of Child (DSM-5-SDS-P). The study was carried out in accordance with the principles of the Declaration of Helsinki, and Inonu University Health Sciences Non-Invasive Clinical Research Ethics Committee Ethics Committee (Date and report number: 2020/776) approved the study.

### Sociodemographic Data Form

Sociodemographic data form consisted of 11 questions was designed by the authors. The form asked questions regarding age, gender, residential area, family structure, presence of Covid-19 disease in family or environment, death due to Covid-19 in the family or environment, Covid-19-related information exposure via TV (news, discussion and health programs), via social media platform (posts, photos or videos), via family conversations and via peer conversations.

### DSM-5 Level 2 Anxiety Scale for Parent/Guardian of Child Age 6-17

The scale consists of 10 five-point Likert type items and is filled in by the parents. Higher scores indicate more severe anxiety symptoms. The anxiety symptom level is determined by obtaining the T-score from the raw score obtained from the scale. Those with T-scores <55 are defined as no symptoms, those with 55-59 as mild, those with 60-69 as moderate, and those with 70 or more points as severe. Sapmaz et al. conducted the Turkish validity and reliability of the scale, and the Cronbach's alpha value of the total score was found to be .91 [15].

### DSM-5 Level 2 Depression Scale for Parent/Guardian of Child Age 6-17

The scale consists of 11 five-point Likert type items and is filled in by the parents. Higher scores indicate more severe depressive symptoms. The depressive symptom level is determined by obtaining the T-score from the raw score obtained from the scale. Those with T-scores <55 are defined as no symptoms, those with 55-59 as mild, those with 60-69 as moderate, and those with 70 or more points as severe. Sapmaz et al. conducted the Turkish validity and reliability study of the scale, and the Cronbach's alpha value of the total score was found to be .92 [16].

### DSM-5 Level 2 Sleep Disturbance Scale for Parent/Guardian of Child Age 6-17

The scale consists of 8 five-point Likert type items and is filled in by the parents. Higher scores mean more severe sleep disturbance. The T-score of the scale is not available. Erkuran et al., conducted the Turkish validity and reliability study of the scale [17].

## STATISTICAL ANALYSIS

SPSS 22.0 (Statistical Program for the Social Sciences) program was used for statistical analyses. Quantitative variables were given as mean ± standard deviation and minimum-maximum and qualitative variables were given as number and percentage. Shapiro-Wilk normality test was used to investigate the normal distribution of data. Pearson's correlation analysis was conducted to investigate the relation between age and the scales scores. To show the independent contribution of sociodemographic characteristics and information exposure to the development of anxiety symptom, depression symptom and sleep disturbance linear regression analyses was conducted. $p<0.05$ (two-tailed) value was accepted for statistical significance.

## RESULTS

The study was completed with 1,030 children, 531 males (51.6%) and 499 females (48.4%). The mean age was found as 10.45±3.26 years. About 18% (n=190) of the participants live in rural areas and 82% (n=840) of them in the urban areas. It was found that 939 (91.2%) participants had nuclear family structure and 91(8.8%) of them had extended family structure (Table-1). In addition, 74 (7.2%) participants specified that their family members or individuals in their environment were infected with Covid-19, and 21 (2.0%) of them specified that one of their fami-

ly members or individuals in their environment died due to Covid19 (Table-1).

**Table 1.** Descriptive variables

| | | Mean ± SD | Min-Max |
|---|---|---|---|
| Age | | 10.45 ± 3.26 | 6-17 |
| | | n | % |
| Gender | Male | 531 | 51.6 |
| | Female | 499 | 48.4 |
| Residential area | Rural area | 190 | 18.4 |
| | Urban area | 840 | 81.6 |
| Family structure | Nuclear | 939 | 91.2 |
| | Extended | 91 | 8.8 |
| Presence of COVID-19 disease in family or environment | No | 956 | 92.8 |
| | Yes | 74 | 7.2 |
| Death due to COVID-19 in the family or environment | No | 1009 | 98.0 |
| | Yes | 21 | 2.0 |
| Exposure to information about Covid-19 via TV | Never | 122 | 11.8 |
| | Sometimes (1-2 days a week) | 404 | 39.2 |
| | Often (every other day) | 212 | 20.6 |
| | Very often (every day) | 292 | 28.3 |
| Exposure to information about Covid-19 via family conversations via social media platform | Never | 456 | 44.3 |
| | Sometimes (1-2 days a week) | 361 | 35.0 |
| | Often (every other day) | 114 | 11.1 |
| | Very often (every day) | 99 | 9.6 |
| Exposure to information about Covid-19 via family conversations | Never | 73 | 7.1 |
| | Sometimes (1-2 days a week) | 433 | 42.0 |
| | Often (every other day) | 287 | 27.9 |
| | Very often (every day) | 237 | 23.0 |
| Exposure to information about Covid-19 via peer conversations | Never | 171 | 16.6 |
| | Sometimes (1-2 days a week) | 513 | 49.8 |
| | Often (every other day) | 224 | 21.7 |
| | Very often (every day) | 122 | 11.8 |
| Anxiety symptoms severity | None to slight | 525 | 51.0 |
| | Mild | 162 | 15.7 |
| | Moderate | 271 | 26.3 |
| | Severe | 72 | 7.0 |
| Depression symptoms severity | None to slight | 737 | 71.6 |
| | Mild | 127 | 12.3 |
| | Moderate | 124 | 12.0 |
| | Severe | 42 | 4.1 |

| | Mean ± SD | Min-Max |
|---|---|---|
| DSM-5-AS-P mean score | 21.10 ± 8.15 | 10-50 |
| DSM-5-DS-P mean score | 19.86 ± 8.21 | 11-55 |
| DSM-5-SDS-P mean score | 15.90 ± 6.67 | 8-40 |

DSM-5-AS-P; DSM-5 Level 2 Anxiety Scale for Parent/Guardian of Child, DSM-5-DS-P; DSM-5 Level 2 Depression Scale for Parent/Guardian of Child, DSM-5-SDS-P; DSM-5 Level 2 Sleep Disturbance Scale for Parent/Guardian of Child

When the information exposure was evaluated, it was showed that 504 (48.9%) participants were often/very often exposed to information flow via TV, 20.7% (n=213) via internet, 50.9% (n=524) via family conversations and 33.5% (n=346) via peer conversations (Table 1).

The mean score of DSM-5-AS-P was 21.1 (SD=8.15, min-max=10-50), the mean score of DSM-5-DS-P was 19.86 (SD = 8.21, min-max=11-55), and the mean score of DSM-5-SDS-P was 15.9 (SD=6.67, min-max=8-40). It was showed that 505 (49%) participants had anxiety symptoms and 293 (28.4%) of them had depressive symptoms. When symptom severities were examined, it was determined that 343 (33.3%) participants had moderate-severe anxiety symptoms and this rate was 16.1% (n=166) for depressive symptoms. It was determined that DSM-5-AS-P mean scores were statistically significantly higher in girls ($p<0.05$), in those living in urban areas ($p<0.05$), and in those who were exposed to information related with covid-19 via TV ($p\leq0.001$), internet ($p\leq0.001$), family ($p\leq0.001$) and peer conversations ($p\leq0.001$). It was also found that DSM-5-DS-P mean scores were statistically significantly higher in girls ($p\leq0.001$), in those who had a family member who died due to covid-19 ($p<0.05$), and in those who were exposed to information related with covid-19 via TV ($p\leq0.001$), internet ($p<0.001$), family ($p\leq0.001$) and peer ($p\leq0.001$) conversations. In addition, DSM-5-SDS-P mean scores were found to be statistically significantly higher in girls ($p<0.01$), in those with an extended family structure ($p<0.05$), and in those who were exposed to information about covid-19 via TV ($p<0.01$), internet ($p\leq0.001$), family ($p<0.01$) and peer conversations ($p<0.01$) (Table-2). Correlation analysis results showed a positive relationship between age and DSM-5-DS-P mean scores (r:0.154, $p\leq0.001$) and DSM-5-SDS-P mean scores (r:0.94, $p<0.01$).

**Table 2.** Differences in DSM-5-AS-P, DSM-5-DS-P, and DSM-5-SDS-P scores

| **Scales** | | **Anxiety symptoms** | | | **Depressive symptoms** | | | **Sleep symptoms** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **Mean (SD)** | **F** | **p** | **Mean (SD)** | **F** | **p** | **Mean (SD)** | **F** | **p** |
| Gender | Male | 20.47 (8.36) | 1.11 | **0.011** | 18.83 (7.53) | 6.47 | **0.000** | 15.37 (6.36) | 6.53 | **0.009** |
| | Female | | | | | | | | | |
| Residential area | Urban area | 21.40 (8.25) | 1.202 | **0.011** | 19.87 (8.15) | 0.439 | 0.926 | 15.94 (6.68) | 0.271 | 0.688 |
| | Rural area | | | | | | | | | |
| Family structure | Nuclear | 21.11 (8.19) | 0.186 | 0.839 | 19.92 (8.30) | 1.265 | 0.424 | 15.76 (6.72) | 1.056 | **0.038** |
| | Extended | | | | | | | | | |
| Presence of COVID-19 disease in family or environment | No | 21.16 (8.17) | 0.087 | 0.326 | 19.83 (8.16) | 1.665 | 0.629 | 15.89 (6.63) | 2.198 | 0.839 |
| | Yes | | | | | | | | | |
| Death due to COVID-19 in the family or environment | No | 21.09 (8.16) | 0.130 | 0.895 | 19.77 (8.16) | 0.682 | **0.015** | 15.89 (6.67) | 0.008 | 0.841 |
| | Yes | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Exposure to information about Covid-19 via TV | No | 16.27 (5.98) | 12.461 | **0.000** | 15.63 (5.68) | 20.70 | **0.000** | 14.40 (5.86) | 2.816 | **0.008** |
| | Yes | | | | | | | | | |
| Exposure to information about Covid-19 via social media platform | No | 18.80 (6.88) | 18.342 | **0.000** | 17.53 (6.92) | 21.26 | **0.000** | 14.81 (6.24) | 4.715 | **0.000** |
| | Yes | | | | | | | | | |
| Exposure to information about Covid-19 via family conversations | No | 16.65 (7.25) | 1.138 | **0.000** | 16.31 (7.10) | 3.402 | **0.000** | 13.63 (5.83) | 2.122 | **0.003** |
| | Yes | | | | | | | | | |
| Exposure to information about Covid-19 via peer conversations | No | 16.11 (6.47) | 11.919 | **0.000** | 15.36 (5.58) | 30.11 | **0.000** | 14.50 (6.29) | 2.579 | **0.003** |
| | Yes | | | | | | | | | |

DSM-5-AS-P; DSM-5 Level 2 Anxiety Scale for Parent/Guardian of Child, DSM-5-DS-P; DSM-5 Level 2 Depression Scale for Parent/Guardian of Child, DSM-5-SDS-P; DSM-5 Level 2 Sleep Disturbance Scale for Parent/Guardian of Child

The effect of dependent variables (gender, residential area, information exposure via TV, internet, family and peer conversations which statistically significant difference was detected in independent sample t-tests) on DSM-5-AS-P mean scores were tested by use of linear regression analysis. The results demonstrated that female gender (95% CI: 0.236–2.08, p=0.014), living urban area (95% CI: 0.46–2.84, p=0.007), information exposure via TV (95% CI: 1.83–4.88, p <0.001), information exposure via internet (95% CI: 2.29–4.19, p <0.001) and information exposure via peer conversations (95% CI: 2.89–5.56, p < 0.001) had a significant effect on DSM-5-AS-P mean score (Table-3).

**Table 3.** Linear Regression for DSM-5 Level 2 Anxiety Scale mean scores

| Variable | B | 95.0% CI | p |
|---|---|---|---|
| Gender<br>(0 = male; 1 = female) | 1.162 | 0.236 – 2.088 | **0.014** |
| Residental area<br>(0 = rural; 1 = urban) | 1.652 | 0.460 – 2.843 | **0.007** |
| Exposure to information about Covid-19 via TV<br>0: never 3: very often | 3.361 | 1.837 – 4.885 | **0.000** |
| Exposure to information about Covid-19 via social media platform<br>0: never 3: very often | 3.241 | 2.293 – 4.190 | **0.000** |
| Exposure to information about Covid-19 via family conversations<br>0: never 3: very often | 1.406 | -0.549 – 3.361 | 0.158 |
| Exposure to information about Covid-19 via peer conversations<br>0: never 3: very often | 4.229 | 2.896 – 5.563 | **0.000** |

Bold indicates P < .05. 95% CI, 95% confidence interval (lower-upper); COVID-19, 2019 Coronavirus disease

The effect of dependent variables (age, gender, had a family member or individual in environment who died due to Covid-19, information exposure via TV, internet, family and peer conversations which statistically significant difference was detected in correlation analysis and independent sample t-test) on DSM-5-DS-P mean scores were tested by use of linear regression analysis. The results demonstrated that old age (95% CI: 0.014–0.334, p=0.033), female gender (95% CI: 0.89–2.77, p<0.001), had a family member who died due to covid-19 (95% CI: 0.139–6.76, p=0.041), information exposure via TV (95% CI: 1.45–4.53, p<0.001), information exposure via internet (95% CI: 1.75–3.88, p<0.001) and information exposure via peer conversations (95% CI: 2.43–5.13, p<0.001) had a significant effect on DSM-5-DS-P mean score (Table-4).

**Table 4.** Linear Regression for DSM-5 Level 2 Depression Scale mean scores

| Variable | B | 95.0% CI | p |
|---|---|---|---|
| Age | 0.174 | 0.014 – 0.334 | **0.033** |
| Gender<br>(0 = male; 1 = female) | 1.836 | 0.897 – 2.775 | **0.000** |
| Death due to COVID-19 in the family or environment<br>(0 = no; 1 = yes) | 3.452 | 0.139 – 6.765 | **0.041** |
| Exposure to information about Covid-19 via TV<br>0: never 3: very often | 2.995 | 1.452 – 4.539 | **0.000** |
| Exposure to information about Covid-19 via social media platform<br>0: never 3: very often | 2.820 | 1.757 – 3.882 | **0.000** |
| Exposure to information about Covid-19 via family conversations<br>0: never 3: very often | 1.156 | -0.841 – 3.154 | 0.256 |
| Exposure to information about Covid-19 via peer conversations<br>0: never 3: very often | 3.782 | 2.431 – 5.134 | **0.000** |

Bold indicates P < .05. 95% CI, 95% confidence interval (lower-upper); COVID-19, 2019 Coronavirus disease

The effect of dependent variables (age, gender, family structure, information exposure via TV, internet, family and peer conversations which statistically significant difference was detected in correlation analysis and independent sample t-tests) on DSM-5-SDS-P mean scores were tested by use of linear regression analysis. The results demonstrated that female gender (95% CI: 0.179–1.78, p=0.017), information exposure via internet (95% CI: 0.45–2.28, p=0.003) and information exposure via family conversations (95% CI: 0.178–3.60, p=0.031) had a significant effect on DSM-5-DS-P mean score (Table-5).

**Table 5.** Linear Regression for DSM-5 Level 2 Sleep Disturbance Scale mean scores

| Variable | B | 95.0% CI | p |
|---|---|---|---|
| Age | 0.104 | -0.033 – 0.242 | 0.137 |
| Gender<br>(0 = male; 1 = female) | 0.983 | 0.179 – 1.787 | **0.017** |
| Family structure<br>(0 = nuclear; 1 = extended) | 1.306 | -0.108 – 2.719 | 0.070 |
| Exposure to information about Covid-19 via TV<br>0:never 3:very often | 0.774 | -0.549 – 2.097 | 0.251 |
| Exposure to information about Covid-19 via social media platform<br>0:never 3:very often | 1.369 | 0.457 – 2.280 | **0.003** |
| Exposure to information about Covid-19 via family conversations<br>0:never 3:very often | 1.891 | 0.178 – 3.604 | **0.031** |
| Exposure to information about Covid-19 via peer conversations<br>0:never 3:very often | 0.757 | -0.400 – 1.915 | 0.199 |

Bold indicates P < .05. 95% CI, 95% confidence interval (lower-upper); COVID-19, 2019 Coronavirus disease

## DISCUSSION

This study aimed to determine the prevalence of anxiety-depressive symptoms that may occur in children and adolescents during pandemics, and to evaluate the association between symptoms of anxiety, depression and sleep disturbances and resources of pandemic process related information exposure and sociodemographic factors. The pandemic at the moment was Covid-19 pandemic, and its process was evaluated. The results revealed that in children and adolescents, the rate of anxiety symptoms and depressive symptoms were 49% and 28.4%, respectively. Also it was found that anxiety, depressive and sleep disturbance symptoms were significantly higher in females. It was shown that information exposure via TV, internet and peer conversations had potential predictive effect on symptoms of anxiety and depressive. In addition, it was showed that information exposure via internet and family conversations had potential predictive effect on sleep disturbance. In addition, it was determined that female gender had a potential predictive effect on symptoms of anxiety and depression and sleep disturbance, and living in an urban area had a potential predictive effect on anxiety symptoms, and the presence of a family member who died due to Covid-19 and older age had a potential predictive effect on depressive symptoms.

Infectious diseases outbreaks have been shown to have adverse impacts on mental health, and pandemic-related stressors may trigger the mental disorders [3,4]. As with previous epidemics, Covid-19 pandemic has adverse consequences on the mental health of children and adolescents. In a research conducted with adolescents in Turkey, the prevalence of moderate and high levels of anxiety and depression symptoms was found to be 28% and 37.6%, respectively [18]. The meta-analysis study carried out with children and adolescents, determined that during the Covid-19 pandemic, prevalence of moderate to severe depression and anxiety symptoms were 25.2% and 20.5%, respectively, and showed that anxiety and depressive symptoms was higher in girls [19]. In addition, it was found that depressive symptoms were higher in older children [19]. Consistent with the literature, this study showed that anxiety and depressive symptoms were higher in girls. However, the prevalence of anxiety and depressive symptoms were found higher than other studies and this may be due to sociocultural and methodological differences.

Another result of this study was that the severity of sleep disturbance was higher in girls, and those who were more exposed to information via internet and family conversations. It is stated that sleep disorders in children during the pandemic may occur due to health problems, family financial condition changes, and increased stress levels due to uncertainty about the future, and isolation measures [20]. Bruni et al., in their study, found that in children and adolescents, a significant delay in bed/wake time, increased time spent on the screen, and that in children increased sleep disturbances such as falling asleep difficulties, anxiety at bedtime, nightmares and sleep terrors [21].

In previous studies, it has been determined that exposure to negative news is related with mental disorders in children and adolescents. In their study, Mongkhon et al. found that those who were exposed to more daily flow of information had a higher risk for development of depression, anxiety symptoms, and insomnia [22]. In addition Yue et al. showed that in children, those who spent more time on media reports about Covid-19 had a greater risk of anxiety and PTSD, while greater exposure to subjective media only increased the risk of PTSD [23]. In the same study, the opposite result was obtained for parents. Media exposure in parents was determined as a protective factor for anxiety and depression. It is stated that this may be due to the different levels of abilities of children and adults in scanning and integrating of information [23]. In addition, this result have showed that children may be more likely to be affected by false news. Kılıncel et al. showed that state anxiety scores were 2.41 times higher in adolescents who were exposed to information via TV [10]. In current study, it was found that information exposure via peer conversations, social media platforms and TV had a predictive effect on depressive-anxiety symptoms, while information exposure via family conversations and social media platforms had a predictive effect on sleep disturbances. The reason why information exposure via social media platforms has been a predictive effect

on all symptoms may be due to the fact that there is more false news in social media platforms. Social media is a platform where users can easily and freely produce content, share it quickly and reach large audiences. The most important difference of social media platforms from other media tools is the absence of any control mechanism. This lack of control also increases the possibility of spreading false news. The easy access to internet and the easy dissemination of information ensure that false news is easily spread in the society, and this situation is even more common and rapid in times of crisis such as pandemics [24]. It has been determined that the spread of fake news in internet has intensified in Covid-19 pandemic [25]. In current study, anxiety and depressive symptoms were found to be statistically significantly higher in those who were exposed to information related with Covid-19 via family conversations, but no significant results were obtained in the regression analysis. This may be due to the fact that adults in the family are more careful when talking among themselves, in environments where their children are also present. We are opinion that the relation between anxiety, depression and sleep disturbances and information exposure via internet, TV and peer conversations may have arisen due to the fact that false information is more common in these information sources.

Characteristics of the participants (older age, being girl, living in urban area, had a family member or individual in environment who died due to Covid-19) appeared to related with worse psychological symptoms. The studies have determined that anxiety disorders, depression and sleep disorders are more common in girls than boys, during the pandemic [26]. Since anxiety disorders, depression and sleep disorders are psychiatric disorders that are more common in girls, it is not surprising that during the pandemic period those are more common in girls. Duan et al., demonsrated that children and adolescents living in urban areas had higher anxiety levels, similar to current study [27]. The high level of anxiety in children living in urban areas may be due to the fact that the number of people infected with Covid-19 and deaths due to covid-19 are higher in the urban area and that the restrictions are more and more strictly enforced in urban areas [27]. The current study demonstrated that the presence of Covid-19 in the family or the environment had no effect on sleep disturbance, anxiety and depressive symptoms, while the presence of death due to Covid-19 in the family or environment had potential predictive effect only on depressive symptoms. The reason for this result may be that the majority of the participants live in urban areas. The individuals infected with Covid-19 is higher in urban areas, and people encounter more patients with Covid-19 and provide clearer information about the course of the disease. This, in turn, may reduce uncertainty and cause less psychiatric symptoms.

Although our study ensures important contributions to the literature, it has some limitations. Firstly this study had a cross-sectional design. Due to the cross-sectional design, the relation between information exposure and anxiety, depression and sleep disturbances could not be determined clearly. Secondly, patients' depression, anxiety symptoms and sleep problems were evaluated with scales. Thirdly, the study was limited to only the Covid-19 pandemic and due to isolation rules, the scales were web-based, resulting in the sampling being entirely voluntary, self-reporting. Fourth, the pre-pandemic mental health status of the participants was not known, so a comparison could not be made. Due to the limitations, longitudinal studies with detailed psychiatric evaluations are needed in order to clearly determine the cause-effect relationship.

In conclusion, current study demonstrated that large proportions of children and adolescents were suffering from mental disorders symptoms during the pandemic period. In addition, it was showed that anxiety and depressive symptoms observed in children and adolescents were related with information exposure about covid-19 via internet, TV and peer conversations. Information exposure via internet and family conversations was also found to be associated with sleep problems. For these reasons, it is important for parents to monitor their children's internet and TV use, to be more careful when talking among themselves in the environments where their children are present and to review the information obtained by their children with them, in order to relieve the children's anxieties and worries.

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